

Remarks

Claims 143-155, 167-193, and 196-226 are pending.

Rejection of Claims under 35 U.S.C. §§ 102(b)/103(a) (Matsumoto)

The Examiner maintains the rejection of the claims, as follows:

- a) Claims 225-226 under Section 102(b) as anticipated by JP 401286361 (Matsumoto);
- b) Claims 143-144, 147, 149-153, 167, 169-170, 172-173, 175-176, 178-179, 181-193, and 196-223 under Section 102(b) as anticipated by or , in the alternative, under Section 103(a) as obvious over Matsumoto;
- c) Claims 145-146, 148, 154-155, 168, 171, 174, 177, and 180 under Section 103(a) as obvious over Matsumoto in view of USP 5,483,094 (Sharma); and
- d) Claim 224 under Section 103(a) as obvious over Matsumoto in view of USP 5849077 (Kenney).

These rejections are respectfully traversed.

Applicant believes that this rejection is in error because:

- 1) The Examiner has mischaracterized the disclosure of Matsumoto – and Matsumoto's disclosure does not support the Examiner's rejection;
- 2) The combination of Sharma with Matsumoto's disclosure does not result in Applicant's devices as claimed; and
- 3) The combination of Kenney with Matsumoto's disclosure does not result in Applicant's devices as claimed.

1) **The Examiner has mischaracterized the disclosure of Matsumoto – and Matsumoto's disclosure does not support the Examiner's rejection.**

In the Office Action at pages 9-10, the Examiner stated (emphasis added):

a) The Applicant argues that Matsumoto does not describe at least two overlying layers of epitaxial silicon because base area 6 is not a separate layer; it is part of SEG area 4. This is not persuasive *because Matsumoto is clearly show two separate epitaxial layers 4 and 6 as shown in fig. 3(b)....*

The Examiner asserts that element 6 in Fig. 3(b) is a second epitaxial layer. The Examiner's assertion is in error.

The Examiner is directed to Fig. 3(b) and the Abstract of Matsumoto, which clearly states that there is only one SEG layer 4.

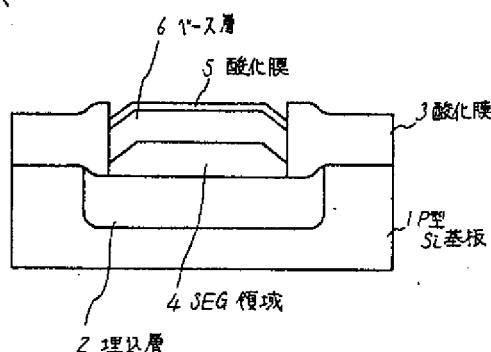


FIG. 3(b)

Abstract of JP1286361

CONSTITUTION: ...a phosphorous doped N type SEG (selective epitaxial growth) area 4 is grown. And an oxide film 5 is grown on the SEG area 4. Next, an insulation film 8 is formed by a rotary application method. Since applied film is formed thick on a facet 7 at the corner part of the SEG area 4 this way and the entire surface of the SEG area 4 is planed, if boron is implanted by an ion implanting method, uniform base 6 is formed. ...

As clearly stated in the abstract – if boron is implanted – uniform base 6 is formed.

Area 6 is a boron doped section of SEG area 4.

Area 6 is not a second SEG layer.

There is only one layer of SEG that is formed – which is SEG area 4.

The Examiner has misinterpreted the figure. The Examiner's position is clearly erroneous with *no basis in fact or support*.

The Examiner is requested to provide the written text in Matsumoto that describes a second SEG layer.

Matsumoto does not teach or suggest Applicant's devices as claimed. Withdrawal of this rejection is respectfully requested.

In the Office Action at page 10, the Examiner further stated (emphasis added):

...In addition, as layer 4 being deposited on the substrate 1, it would have comprising *multiple* sub-layers that would constitute for layer 4. Thus the final structure would be a *continuous* epitaxial layer with a desired thickness. Furthermore, making integral, separable or continuous would have been obvious...

The Examiner's statement is contradictory. The Examiner seems to argue that layer 4 is composed of *multiple* layers – but, at the same time, is a *single continuous* layer.

Matsumoto describes layer 4 as follows (Abstract, emphasis added):

...A window is opened inside the buried layer 2, and a phosphorous doped N type SEG (selective epitaxial growth) area 4 is grown....

Matsumoto describes layer 4 as being grown within the opening in layer 2.

Matsumoto does not describe layer 4 as composed of multiple layers.

2) **The combination of Sharma with Matsumoto's disclosure does not result in Applicant's devices as claimed.**

The Examiner rejected dependent Claims 145-146, 148, 154-155, 168, 171, 174, 177, and 180 based on the combination of Matsumoto with Sharma.

The Examiner cites Sharma for teaching an insulative layer **41/61** composed of silicon oxide and/or silicon nitride, citing to col. 5, lines 29-32, and to col. 8, line 32. The Examiner also cites Sharma for teaching a dielectric layer having a 2-5nm thickness.

Regardless of the insulative material or thickness of the layer utilized in Sharma, this information combined with Matsumoto does not result in Applicant's devices.

This information from Sharma does not overcome the failure of Matsumoto to teach a device having multiple overlying epitaxial silicon layers.

Matsumoto – either alone or combined with Sharma, does not teach or suggest Applicant's devices as claimed. Withdrawal of this rejection is respectfully requested.

3) **The combination of Kenney with Matsumoto's disclosure does not result in Applicant's devices as claimed.**

The Examiner rejected dependent Claim 224 based on the combination of Matsumoto with Kenney. Dependent Claim 224 further defines the structure of Claim 143 wherein each of the epitaxial silicon layers defines a facet having a (100) plane orientation.

The Examiner cites Kenney for disclosing a top surface of at least one epitaxial silicon crystal **19** as defining a facet having a (100) plane orientation.

Regardless of Kenney's disclosure, this information combined with Matsumoto does not result in Applicant's device as recited in Claim 224. This information from Kenney does not make up for the failure of Matsumoto's disclosure to teach a device having multiple overlying epitaxial silicon layers.

Matsumoto – either alone or combined with Kenney, does not teach or suggest Applicant's devices as claimed. Withdrawal of this rejection is respectfully requested.


In sum, Matsumoto, either alone or in combination with the secondary references, does not teach or suggest Applicant's devices as claimed.

Accordingly, withdrawal of these rejections is respectfully requested.

Extension of Term. The proceedings herein are for a patent application and the provisions of 37 CFR § 1.136 apply. Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that Applicant has inadvertently overlooked the need for a petition for extension of time. If any extension and/or fee are required, please charge Account No. 23-2053.

It is submitted that the present claims are in condition for allowance, and notification to that effect is respectfully requested.

Respectfully submitted,



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